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Date: 2/11/02

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PRELIMINARY AMENDMENT

Commissioner for Patents
Washington, D.C. 20231

Sir:

Preliminary to examination please amend the above-identified application as follows:

IN THE CLAIMS

Please add Claims 128-180 as follows:

--128. A communication encoding apparatus, comprising:

receiving means for receiving initial binary data having a characteristic Hamming weight; and

processing means in communication with the data input for determining the characteristic Hamming weight of the initial binary data, performing a comparison of the characteristic Hamming weight of the initial binary data with a

predetermined value, and processing the initial binary data based on the

comparison to thereby develop processed binary data having a Hamming weight not

less than the characteristic Hamming weight of the initial binary data.

129. The apparatus of claim 128, wherein processing means determines the

characteristic Hamming weight of the initial binary data by counting one-valued

bits in the initial binary data.

130. The apparatus of claim 128, wherein the predetermined value is a

predetermined minimum Hamming weight threshold value.

131. The apparatus of claim 128, wherein the processing means bitwise

inverts the initial binary data if the Hamming weight of the initial binary data is

less than the predetermined value.

132. The apparatus of claim 131, wherein the processing means supplies an

indication of whether the Hamming weight of the initial binary data is less than the

predetermined value.

133. The apparatus of claim 132, wherein the indication comprises a binary

digit having a first value if the Hamming weight of the initial binary data is less

than the predetermined value and having a second value otherwise.

134. The apparatus of claim 131, wherein the processing means further

supplies an indication of whether bits of the processed binary data are inverted.

135. The apparatus of claim 134, wherein the indication comprises a binary digit having a first value if the bits of the processed binary data are inverted and having a second value otherwise.

136. The apparatus of claim 128, wherein the processing means performs at least one of error correction coding, run-length encoding, and precoding.

137. The apparatus of claim 146, wherein a symbol boundary of an encoded symbol does not change relative to error correction coding.

138. A communication encoding apparatus, comprising:

receiving means for receiving a first sequence of binary digits that collectively have a characteristic Hamming weight;

processing means for inverting each of the binary digits in the first sequence of binary digits if the Hamming weight of the first sequence of binary digits is below a predetermined threshold Hamming weight value and providing an indication of whether the binary digits in the first sequence of binary digits have been inverted.

139. The apparatus of claim 138, wherein the processing means determines the characteristic Hamming weight of the first sequence of binary digits by counting one-valued bits in the first sequence of binary digits.

140. The apparatus of claim 138, wherein the indication comprises an indication of whether the Hamming weight of the first sequence of binary digits is below the predetermined threshold Hamming weight value.

141. The apparatus of claim 140, wherein the indication comprises a binary digit having a first value if the Hamming weight of the first sequence of binary digits is below the predetermined threshold Hamming weight value and having a second value otherwise.

142. The apparatus of claim 138, wherein the processing means performs at least one of error correction coding, run-length encoding, and precoding of the first sequence of binary digits.

143. The apparatus of claim 142, wherein a symbol boundary of an encoded symbol does not change relative to error correction coding.

144. A system for communicating a bitstream having a characteristic Hamming weight to a destination via a channel, the apparatus comprising:

a first processing means at a source of the bitstream for determining the characteristic Hamming weight of the bitstream and for inverting each bit in the bitstream if the characteristic Hamming weight of the bitstream is below a threshold value and developing an indication of whether the bits in the bitstream are inverted;

wherein the first processing means is in communication with the channel to permit delivery of the bitstream and the indication of whether the bits in the bitstream are inverted to the destination via the channel; and

a second processing means at the destination and in communication with the channel for receiving the bitstream and the indication and inverting each bit in the bitstream at the destination if the indication indicates that the bits are inverted.

145. The system of claim 144, wherein the first processing means determines the characteristic Hamming weight of the bitstream by counting one-valued bits in the bitstream.

146. The system of claim 144, wherein the threshold value is a predetermined minimum Hamming weight threshold value.

147. The system of claim 146, wherein the indication comprises an indication of whether the Hamming weight of the bitstream is below the threshold value.

148. The system of claim 147, wherein the indication comprises a binary digit having a first value if the Hamming weight of the bitstream is below the threshold value and having a second value otherwise.

149. The system of claim 144, wherein the first processing means performs at least one of error correction coding, run-length encoding, and precoding of the bitstream.

150. The system of claim 149, wherein a symbol boundary of an encoded symbol does not change relative to error correction coding.

151. A communication decoder, comprising:

receiving means for receiving processed binary data including a binary code word and an indication of whether bits of the binary code word are inverted; and

processing means for inverting each bit of the binary code word if the indication indicates that the bits are inverted.

152. The decoder of claim 151, wherein the indication comprises a binary digit having a first value if the bits of the binary code word are inverted and having a second value otherwise.

153. The decoder of claim 151, further comprising means for performing at least one of error correction coding, run-length encoding, and precoding of the binary code word.

154. The decoder of claim 153, wherein a symbol boundary of an encoded symbol does not change relative to error correction coding.

155. A disk drive, comprising:

receiving means for receiving initial binary data having a characteristic Hamming weight; and

processing means in communication with the data input for determining the characteristic Hamming weight of the initial binary data, performing a comparison of the characteristic Hamming weight of the initial binary data with a predetermined value, and processing the initial binary data based on the

comparison to thereby develop processed binary data having a Hamming weight not less than the characteristic Hamming weight of the initial binary data.

156. The disk drive of claim 155, wherein processing means determines the characteristic Hamming weight of the initial binary data by counting one-valued bits in the initial binary data.

157. The disk drive of claim 155, wherein the predetermined value is a predetermined minimum Hamming weight threshold value.

158. The disk drive of claim 155, wherein the processing means bitwise inverts the initial binary data if the Hamming weight of the initial binary data is less than the predetermined value.

159. The disk drive of claim 158, wherein the processing means supplies an indication of whether the Hamming weight of the initial binary data is less than the predetermined value.

160. The disk drive of claim 159, wherein the indication comprises a binary digit having a first value if the Hamming weight of the initial binary data is less than the predetermined value and having a second value otherwise.

161. The disk drive of claim 158, wherein the processing means further supplies an indication of whether bits of the processed binary data are inverted.

162. The disk drive of claim 161, wherein the indication comprises a binary digit having a first value if the bits of the processed binary data are inverted and having a second value otherwise.

163. The disk drive of claim 155, wherein the processing means comprises means for performing at least one of error correction coding, run-length encoding, and precoding.

164. The disk drive of claim 163, wherein a symbol boundary of an encoded symbol does not change relative to error correction coding.

165. A disk drive, comprising:

receiving means for receiving a first sequence of binary digits that collectively have a characteristic Hamming weight;

processing means for inverting each of the binary digits in the first sequence of binary digits if the Hamming weight of the first sequence of binary digits is below a predetermined threshold Hamming weight value and providing an indication of whether the binary digits in the first sequence of binary digits have been inverted.

166. The disk drive of claim 165, wherein the processing means determines the characteristic Hamming weight of the first sequence of binary digits by counting one-valued bits in the first sequence of binary digits.

167. The disk drive of claim 168, wherein the indication comprises an indication of whether the Hamming weight of the first sequence of binary digits is below the predetermined threshold Hamming weight value.

168. The disk drive of claim 167, wherein the indication comprises a binary digit having a first value if the Hamming weight of the first sequence of binary digits is below the predetermined threshold Hamming weight value and having a second value otherwise.

169. The disk drive of claim 165, wherein the processing means includes means for performing at least one of error correction coding, run-length encoding, and precoding of the first sequence of binary digits.

170. The disk drive of claim 169, wherein a symbol boundary of an encoded symbol does not change relative to error correction coding.

171. A communication encoding apparatus, comprising:

an input for obtaining initial binary data having a characteristic Hamming weight;

a Hamming weight calculator for determining the characteristic Hamming weight of the initial binary data;

a comparator for performing a comparison of the characteristic Hamming weight of the initial binary data with a predetermined value; and

a processor for processing the initial binary data based on the comparison to thereby develop processed binary data having a Hamming weight not less than the characteristic Hamming weight of the initial binary data.

172. The apparatus of claim 171, wherein the Hamming weight calculator determines the characteristic Hamming weight of the initial binary data by counting one-valued bits in the initial binary data.

173. The apparatus of claim 171, wherein the predetermined value is a predetermined minimum Hamming weight threshold value.

174. The apparatus of claim 171, wherein the processor bitwise inverts the initial binary data if the Hamming weight of the initial binary data is less than the predetermined value.

175. The apparatus of claim 174, wherein the processor further supplies an indication of whether the Hamming weight of the initial binary data is less than the predetermined value.

176. The apparatus of claim 175, wherein the indication comprises a binary digit having a first value if the Hamming weight of the initial binary data is less than the predetermined value and having a second value otherwise.

177. The apparatus of claim 174, wherein the processor further supplies an indication of whether bits of the processed binary data are inverted.

178. The apparatus of claim 177, wherein the indication comprises a binary digit having a first value if the bits of the processed binary data are inverted and having a second value otherwise.

179. The apparatus of claim 171, wherein the processor further performs at least one of error correction coding, run-length encoding, and precoding.

180. The apparatus of claim 179, wherein a symbol boundary of an encoded symbol does not change relative to error correction coding.--

REMARKS

Claims 1-180 are presented for examination. Claims 128-180 have been added by this amendment.

Applicants respectfully request early passage to issue of the above-identified application.

Respectfully submitted,

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